

side bearing clearance may only be increased proportionately.

§ 229.71 Clearance above top of rail.

No part or appliance of a locomotive except the wheels, flexible nonmetallic sand pipe extension tips, and trip cock arms may be less than 2½ inches above the top of rail.

§ 229.73 Wheel sets.

(a) The variation in the circumference of wheels on the same axle may not exceed ¼ inch (two tape sizes) when applied or turned.

(b) The maximum variation in the diameter between any two wheel sets in a three-powered-axle truck may not exceed ¾ inch, except that when shims are used at the journal box springs to compensate for wheel diameter variation, the maximum variation may not exceed 1¼ inch. The maximum variation in the diameter between any two wheel sets on different trucks on a locomotive that has three-powered-axle trucks may not exceed 1¼ inch. The diameter of a wheel set is the average diameter of the two wheels on an axle.

(c) On standard gauge locomotives, the distance between the inside gauge of the flanges on non-wide flange wheels may not be less than 53 inches or more than 53½ inches. The distance between the inside gauge of the flanges on wide flange wheels may not be less than 53 inches or more than 53¼ inches.

(d) The distance back to back of flanges of wheels mounted on the same axle shall not vary more than ¼ inch.

§ 229.75 Wheels and tire defects.

Wheels and tires may not have any of the following conditions:

(a) A single flat spot that is 2½ inches or more in length, or two adjoining spots that are each two or more inches in length.

(b) A gouge or chip in the flange that is more than 1½ inches in length and ½ inch in width.

(c) A broken rim, if the tread, measured from the flange at a point five-eighths inch above the tread, is less than 3¾ inches in width.

(d) A shelled-out spot 2½ inches or more in length, or two adjoining spots that are each two or more inches in length.

(e) A seam running lengthwise that is within 3¾ inches of the flange.

(f) A flange worn to a ⅞ inch thickness or less, gauged at a point ⅝ inch above the tread.

(g) A tread worn hollow ⅝ inch or more on a locomotive in road service or ¾ inch or more on a locomotive in switching service.

(h) A flange height of 1½ inches or more measured from tread to the top of the flange.

(i) Tires less than 1½ inches thick.

(j) Rims less than 1 inch thick on a locomotive in road service or less than ¾ inch on a locomotive in yard service.

(k) A crack or break in the flange, tread, rim, plate, or hub.

(l) A loose wheel or tire.

(m) Fusion welding may not be used on tires or steel wheels of locomotives, except for the repair of flat spots and worn flanges on locomotives used exclusively in yard service. A wheel that has been welded is a welded wheel for the life of the wheel.

ELECTRICAL SYSTEM

§ 229.77 Current collectors.

(a) Pantographs shall be so arranged that they can be operated from the engineer's normal position in the cab. Pantographs that automatically rise when released shall have an automatic locking device to secure them in the down position.

(b) Each pantograph operating on an overhead trolley wire shall have a device for locking and grounding it in the lowest position, that can be applied and released only from a position where the operator has a clear view of the pantograph and roof without mounting the roof.

§ 229.79 Third rail shoes.

When locomotives are equipped with both third rail and overhead collectors, third-rail shoes shall be deenergized while in yards and at stations when current collection is exclusively from the overhead conductor.

§ 229.81 Emergency pole; shoe insulation.

(a) Each locomotive equipped with a pantograph operating on an overhead trolley wire shall have an emergency